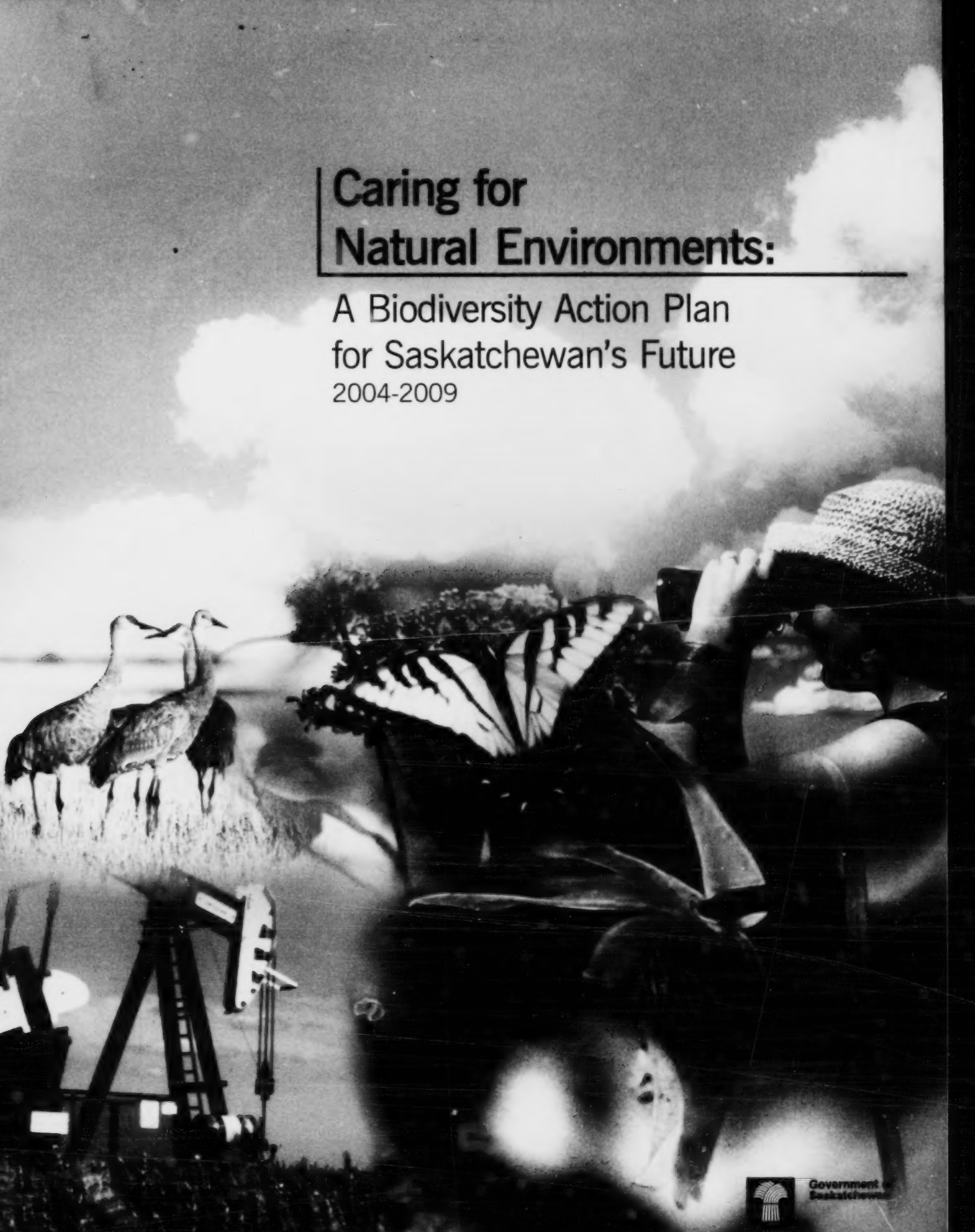

# Caring for Natural Environments:

## A Biodiversity Action Plan for Saskatchewan's Future

2004-2009

Government of Saskatchewan

# Acknowledgements

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*Some photographs courtesy of Saskatchewan Conservation Data Centre, Saskatchewan Environment.*

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**List of Agency Acronyms:**

**CYR** - Culture, Youth and Recreation
**GRAA** - Government Relations and Aboriginal Affairs
**HT** - Highways and Transportation
**PSC** - Public Service Commission
**SAFRR** - Saskatchewan Agriculture, Food and Rural Revitalization
**SE** - Saskatchewan Environment
**SH** - Saskatchewan Health
**SIR** - Saskatchewan Industry and Resources
**SWA** - Saskatchewan Watershed Authority

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# Executive Summary

*Photo courtesy J. Pepper*

The people of Saskatchewan have an enormous responsibility. They are the caretakers, or stewards, of an environment that encompasses an extraordinary range of unique features and ecosystems. They include native prairie grasslands, sand hills, wetlands, lakes, rivers, sparsely treed shield, bogs, and forests. These ecosystems are home to a rich variety of living things including trees and grasses, large and small mammals, reptiles and amphibians, fish, birds, insects, mosses, lichens, and even bacteria. This diversity of living things and the ecosystems of which they are a part is termed "biodiversity". A key concept of biodiversity is that every living thing, including people, has a connection to every other living thing and its environment.

Maintaining the province's biodiversity for now and into the future will take planning, cooperation and commitment from the public, special interest groups and the government. Biodiversity conservation will never be complete, but instead will continue to evolve and grow as time passes and our resource needs and ecological understanding increase. A healthy environment is considered the key component of a foundation for a green and prosperous economy.

For us, as stewards, the best way to approach this commitment to conservation is to develop a plan with very definite goals. The Government of Saskatchewan has developed a Biodiversity Action Plan intended to guide efforts of all sectors over a five-year period, through to 2009.

Based on both internal and public consultation the Biodiversity Action Plan focuses primarily on government actions. Its goal is to improve policies, programs, planning, management systems and access to information in support of biodiversity conservation and sustainable use of resources by all sectors. This approach means making decisions based on an ecosystem perspective that integrates the social and economic need to develop a resource with the need to protect the integrity of the environment

Some of the specific conservation actions proposed in this Plan include:

- Expanding our efforts to conserve ecosystems and plants and animals in danger of extinction.
- Dealing with the harm caused by species introduced from outside their own ecosystems (e.g., invasive exotic species such as purple loosestrife and leafy spurge).
- Improving the management of our impact on wild species.
- Assessing the opportunity for the province to encourage and support biodiversity conservation by urban and rural municipalities and First Nations.
- Ensuring representation of all ecosystems within the Representative Areas Network and undertaking management to maintain the ecological health of all protected lands. These lands include provincial parks, ecological reserves and Fish and Wildlife Habitat Lands.
- Supporting an ecosystem-based approach to planning through, for example, land use planning and Crown land and resource management.
- Participating in national biodiversity conservation initiatives which include dealing with invasive exotic species, land management and stewardship, science and information and status and trend reporting.
- Exploring how environmental assessment may be used to integrate biodiversity conservation and development at an early planning stage.
- Ensuring all departments and Crown corporations incorporate an environmental component when developing future plans.
- Enhancing formal and informal opportunities for staff learning and public education.
- Assessing a variety of economic instruments that support biodiversity conservation on agricultural lands.

What are the costs and benefits of biodiversity conservation? While it is fairly easy to find a direct dollar benefit from the use of natural resources, it is often more difficult to put a dollar figure on the economic benefits of conserving biodiversity. However, there are economic benefits to be gained from acting now to conserve biological diversity. These benefits include maintaining future opportunities for resource use, a reduction in the cost of rehabilitating species and ecosystems and the removal of uncertainty for industry by providing clear guidelines for development and for gauging the impact of a proposed development on the local ecology. Several objectives are also designed to make it easier and quicker to get information and access to the tools needed for ecosystem-based management. Ultimately, sustainable resource use and better access to information and tools will yield long-term environmental and economic benefits.

In developing the plan, most of the actions were designed to have limited economic impact on individuals and industry. Also, many actions are in fact, already underway and recommended to continue. Implementation of the plan will largely be met with existing budgets and within the context of overall provincial spending priorities over the next five years. Agencies will need to ensure that actions they are responsible for are accounted for within their strategic plans. Progress on achieving the Biodiversity Action Plan's goals and objectives will be coordinated and monitored through a committee on the environment, to be chaired by the Deputy Minister of Saskatchewan Environment.

## Biodiversity

Biodiversity is simply "the Variety of Life". Biodiversity includes all species of plants, animals and micro-organisms, from the smallest of insects to the towering white spruce and the ecosystems and ecological processes of which they are a part.

Scientists often refer to three levels of diversity; genetic, species and ecosystem diversity. All three levels are important and interact with and influence each other:

Genetic diversity: the variety of genetic information contained in all of the individual plants, animals and micro-organisms that inhabit the earth.

Species diversity: the variety of living organisms on earth.

Ecosystem diversity: the variety of habitats, communities of living things and ecological processes on earth.

Maintaining nature's rich variety of species, with all their genetic diversity and complex interactions with the physical environment is critical for the conservation and sustainable use of functioning ecosystems. Ecosystems are appropriate targets for conservation action; it is at this level that we can begin to take into account the many ecological interactions between organisms and the environment.

# WHY WE NEED TO CONSERVE BIODIVERSITY

There are many reasons for conserving biodiversity and using biological resources in a sustainable manner. Since no life, including our own, would exist without the goods and services provided by biological resources, those resources can be considered priceless. Biological diversity is essential for human food, clean water, shelter, health, work, recreation and culture. This is particularly true in Saskatchewan where agriculture and other biodiversity-related economic activities, including forestry, fishing, hunting and tourism play a large role in the economy.

Can we be more specific about the economic value of biodiversity in Saskatchewan? Certainly we can say that biodiversity has served the province well. The rich soils underlying diverse native prairie and annual crop production make agriculture a cornerstone of the provincial economy and the social fabric of Saskatchewan. Agriculture is dependent on biodiversity as a source of domesticated plants and animals and genetic material for new varieties. Biodiversity is also the source of goods for other sectors of our economy including forestry, fisheries, recreation and tourism. Approximately 24% of Saskatchewan's Gross Domestic Product (GDP = $29 billion in 2000) is generated from natural resources. Nearly 60% of this is accounted for by the mining and oil and gas sectors while the remaining 40% is accounted for by agriculture, forestry, fishing, and hunting. The tourism sector accounts for an additional 4% of Saskatchewan's GDP.

In 2002 primary agriculture and related service industries represented $2.2 billion of the provincial GDP and employed approximately 46,200 people. The forest industry currently exports $884 million in forest products each year and employs about 9,000 people with 31 Saskatchewan communities being dependent on the industry's continued sustainability. Further expansion of the forest industry is expected to create a $750 million increase in GDP. Tourism and recreation are also growing sectors of our economy employing more than 22,000 people.

These economic benefits have not, however, come without cost. Over the last 150 years cultivation with annual cropping and other development has resulted in significant loss of native prairie habitat and a decline in prairie soil fertility by up to one-third. Past forestry practices have resulted in some areas not being adequately restocked. Both of these issues are now recognized and are being addressed. The key to sustaining the economic benefits of biological resources lies not in over-utilizing resources in the short-term, but in maintaining the long-term productivity of the environment. This idea is central to the concept of sustainable development.

Apart from the direct use of biological resources to produce goods, the value of many of the services provided by biodiversity is difficult to estimate. These services include such things as clean water, flood control, pollination, pest control, pharmaceuticals and waste management. Wetlands act as natural water filters and as buffers against severe flooding. Bees and other insects pollinate our crops without charge. Birds, spiders and other animals consume large numbers of pests that would otherwise damage our crops. Many of our medicines are derived from wild plants and a myriad of micro-organisms routinely take our wastes and recycle them back into the environment. Replacing these services with artificial methods would be very expensive or impossible.

Biodiversity, including fish, wildlife, wild lands and natural processes, is priceless. Canadians have said so in several polls and are demanding that biodiversity be conserved for today and for the future. The key to maintaining biodiversity lies in adopting a long-term view of resource use. It also depends on all sectors of society considering and recognizing not only social and economic consequences of their actions but also the environmental consequences. By doing so society should avoid incurring future costs to correct environmental damage and realize economic benefits for the long term.

# Why Have a Biodiversity Action Plan?

As the impact of human activities on the fundamental ecological process of the planet grows so to does the list of species and ecosystems at risk. Addressing the damage and loss requires that we understand the causes and take action based on that understanding. Underlying threats to biodiversity include the size and distribution of the human population, the level of resource consumption, programs and policies that effectively provide incentives for the depletion of biological diversity and failing to recognize the full value of environmental goods and services. While these underlying causes are often related to universal human values and are extremely complex and difficult to address, there are more direct and immediate threats that can and should be addressed at the provincial and local levels.

The immediate threats to biodiversity can be summarized under five main headings: habitat loss and fragmentation, invasive exotic species, pesticides and pollution, over-harvesting and global warming. Habitat loss and fragmentation are the most serious problems, especially in the southern half of the province where most of the native prairie has been cultivated and the highest density of roads exist. Aquatic systems, such as streams, are also fragmented by structures including dams, poorly constructed road crossings and other barriers.

The next most serious problem is invasive exotic species. Hundreds of species have been deliberately or accidentally introduced into the province and some have become serious threats to native species. For example, leafy spurge can completely displace native vegetation, European carp destroy the habitat of other fish and non-native ladybugs may out-compete their native counterparts. Many of these non-native species are also serious agricultural pests responsible for millions of dollars in lost revenue.

The widespread use of pesticides also poses a threat to the province's biodiversity. Herbicides and insecticides can kill beneficial native plants and insects. Improperly used pesticides also promote the evolution of resistance in pests, which can also reduce the long-term effectiveness of the pesticides. The combined impact of the increasing number of exotic pests and the need to control all pests highlights the need to develop more ecologically friendly and sustainable pest management tools.

*Photo courtesy J. Pepper*

Over-harvesting of game species has largely been addressed through regulations that prevent people from taking too many plants, animals, birds or fish for sport or consumption. However there is still the issue of poaching and its impact on the province's biodiversity. Provincial enforcement officers estimate poachers take as many animals as the people who legally hunt, fish or harvest. This means we must focus attention on dealing with those who ignore existing regulations. Not all of the harvesting pressure comes from illegal users. For example, research shows that the number of fish in a lake drops dramatically once a road is opened to the lake. Also, there are currently no regulations addressing the harvest of wild plants unless they are legally designated species at risk. The challenge facing us is balancing the need to use the resource with the need to conserve the resource.

Finally, climate change is acting in concert with the other forces to increase the impacts on native species in Saskatchewan. For example, species' ranges expand or contract as an adaptive response to natural climate variation. As global warming continues this requirement for range movement will likely increase. However, movement of species in the southern part of the province is very difficult due to extensive habitat loss and fragmentation. It is therefore vital to re-establish or maintain linkages or corridors across ecosystems that will allow for the movement of these species and their genes. Implementation of the Action Plan will contribute to the overall health of the natural environment and nature's ability to respond to climate change.

Sustainable development of biological resources and biodiversity are two separate concepts that are inescapably linked. Sustainable development requires that society be responsible to ensure that the needs of current generations are met and at the same time ensuring the ability of future generations to meet their needs. Apart from our dependence on biological resources, biodiversity has several features that distinguish it from other environmental issues and explain why biodiversity warrants specific attention through an action plan.

These features include:

- Species and genetic biodiversity loss is irreversible.
- Many species, especially within invertebrate, microbe and virus groups, have yet to be identified.
- Ecosystems under stress often continue to function up to a threshold level and then collapse, often quite suddenly. These thresholds are unknown and the uncertainty makes management more complex.
- Many biodiversity problems cannot be solved one activity at a time, a multi-faceted ecosystem approach is required.
- While some biodiversity has major economic value, much of its immediate economic value has not been documented. Healthy ecosystems provide clean air, water, nutrients and other goods and services essential to life, but are very difficult to value in dollars.
- The causes of genetic, species and ecosystem losses are extremely complex and often involve many different sectors and forms of human activity.

## Key Milestones

A progress report on all initiatives undertaken by Saskatchewan in support of the Canadian Biodiversity Strategy since 1995 has been prepared entitled *"Caring for Saskatchewan's Biodiversity: A Progress Report on Government Related Initiatives Towards Implementing the Goals of the Canadian Biodiversity Strategy"* and released by the Premier in February 1999.

A framework discussion document *"Caring for Saskatchewan's Natural Environment: Framework for a Saskatchewan Biodiversity Action Plan"* was released for public discussion in the fall of 2000.

*"Caring for Saskatchewan's Natural Environments: A Proposed Biodiversity Action Plan"* was released for public review and comment, in 2002.

# Development of the Action Plan

In June 1992 more than 150 heads of government attended the "Earth Summit", a United Nations Conference on Environment and Development held in Rio de Janeiro. One important outcome of this gathering was the Convention on Biodiversity, which is global in scope and covers the full range of biological diversity. The primary aim of the Convention is the conservation of biological diversity, its sustainable use and the fair and equitable sharing of the benefits arising from the use of genetic resources. Canada was the first industrialized nation to ratify the agreement.

Canada's response to the Convention on Biodiversity was the development of the Canadian Biodiversity Strategy in 1995. This national strategy, which has the agreement of all provinces and territories, set out long-term goals and actions for achieving biodiversity conservation and the sustainable use of biological resources. Each jurisdiction is responsible for implementing the strategy based on its own priorities and resources. Since then the province of Quebec has developed an action plan and in 2001 all provincial, territorial and federal jurisdictions agreed to work collaboratively on 4 common priorities; stewardship, invasive exotic species, research and information, and status and trends reporting.

Saskatchewan's commitment to implement the Canadian Biodiversity Strategy initiated the development of a government-wide plan to address biodiversity conservation. Although the Saskatchewan government performs a key leadership role, responsibility for carrying out the plan lies with all sectors of society. In recognition of the scope of this task and the vastness of the issues, the Saskatchewan Biodiversity Interagency Steering Committee (ISC) was established in 1998 to oversee the development of the action plan. This process included two rounds of public consultation.

*Caring for Natural Environments: A Biodiversity Action Plan for Saskatchewan's Future* is Saskatchewan's response to the national strategic direction laid out in the Canadian Biodiversity Strategy and is an important milestone for the province and biodiversity conservation. The plan sets out what is important to the province locally, nationally and internationally and where different sectors of government and society can make a contribution to biodiversity conservation. The plan is visionary and practical, serving as an umbrella for a variety of provincial actions meant to achieve long-term conservation of biodiversity and the essential ecological processes and life support systems upon which our livelihood depends.

# Caring for Natural Environments: A Biodiversity Action Plan for Saskatchewan's Future

## Vision

*Saskatchewan will act with wisdom and prudence today to ensure we leave future generations a nurturing and dynamic environment rich in its biodiversity.*

The people of Saskatchewan have the privilege of living in a province rich in its diversity of peoples, landscapes and watersheds - ranging from prairie grassland to boreal forests and sparsely treed shield, from sand dunes and wetlands, to abundant rivers and bogs - all supporting life of many descriptions. With this privilege comes the responsibility of caring for this inheritance on behalf of current and future generations.

# Principles

Stewardship of the environment is the responsibility of everyone in Saskatchewan. The following principles support biodiversity conservation and the sustainable use of biological resources.

- **Shared Responsibility:** We depend on biodiversity for our physical, economic and cultural needs. That means it is in our interest to contribute to biodiversity conservation and to use biological resources in a sustainable manner. Everyone in Saskatchewan, including private landowners and land managers, all levels of governments, Aboriginal peoples, members of interest groups, industry and other agencies, must work together to identify problems, opportunities and to find common solutions.
- **Effective Public Participation:** The province will encourage understanding and appreciation of the value of biodiversity and ecological processes and will also encourage all Saskatchewan residents to participate in the stewardship of biological resources.
- **Ecosystem-based Management:** Maintenance of ecosystems are prerequisites to the conservation of biodiversity. An ecological approach to resource management and the sustainable use of biological resources are central to conserving biodiversity and ecosystem health while supporting society's social and economic needs.
- **Balanced Values:** Use of biological resources must acknowledge and balance ecological, economic, social and cultural values.
- **Knowledge-based Decisions:** The conservation of biodiversity and the sustainable use of biological resources should be carried out using the best information, innovations and practices available. This includes scientific, Aboriginal traditional knowledge and local knowledge.
- **Leadership:** The Saskatchewan government will provide leadership in biodiversity conservation. Government, in partnership with other agencies and organizations, will work effectively and efficiently to integrate and harmonize management programs and policies that ensure long term sustainability of the environmental, economic, social and cultural benefits derived from biological resources.

## Prairie Conservation

Saskatchewan's Prairie Conservation Action Plan (PCAP) has recently been renewed with the 2003-2008 Plan launched in June. The Plan is action-oriented, consisting of 78 action items which relate to its five goals:

1) To Sustain a Healthy Native Prairie Resource
2) To Conserve the Remaining Prairie Resource
3) To Maintain Saskatchewan's Native Prairie Biological Diversity
4) To Promote Complementary Sustainable Use of Native Prairie
5) To Increase Awareness and Understanding of Nature Prairie and its Values

The PCAP Partnership is chaired by the Saskatchewan Stock Growers Association and has representation from over 25 groups representing industry, federal and provincial government agencies, non-government organizations, and Saskatchewan's two universities. Progress is tracked and evaluated annually through the publication of "Partner Updates".

# Biodiversity Action Plan Goals, Objectives and Actions

The following sections and tables explain the goals of the Plan and list the related objectives and specific actions. Agencies primarily responsible for carrying out different elements of the Plan are named and completion dates for actions are provided.

## Goals

## Goal One

**Conservation and Sustainable Use**

*To conserve biodiversity and use biological resources in a sustainable manner*

The people of this province have always used biological resources for food, clothing, medicine, fuel and shelter as well as for spiritual, recreation and tourism purposes. Thanks to the wealth of natural resources they have claimed the vast expanses of prairie and forest as their home and have thrived. Conservation and sustainable use of Saskatchewan's biodiversity resources are essential if we are to continue to reap the economic, social and ecological benefits they provide. In order to maintain biodiversity resources, their use and the threats to the ecosystems they are a part of must be managed using guiding principles that are consistent with an ecosystem approach. This goal can only be achieved in partnership with all stakeholders and by promoting the stewardship of resources.

Within the broad ecosystem approach, specific issues require special consideration. Saskatchewan is home to a growing number of species and ecosystems at risk of extinction and degradation due, in large part, to the alteration and fragmentation of the natural landscape. In addition, invasive exotic species have become a major threat to our biodiversity resources through their ability to displace native species or cause disease. The province also faces the challenge of ensuring that the biodiversity represented in terrestrial and aquatic ecosystems continues into the future and that selected examples of these systems serve as benchmarks that we can use to monitor the effectiveness of environmental stewardship. To this end the province has established a provincial Representative Areas Network which includes parks, ecological reserves and wildlife lands. Maintaining viable populations of all native animals and plants and conserving natural ecosystems must be the central theme of ecosystem-based management.

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective One<br>Biological Resources:<br>Conserve native ecosystems and manage wild species within sustainable harvest levels. | **1.1 Sustainably manage the harvest of all wild species within an ecosystem context.**<br>• Examine the policy or legislative needs to address the harvest of wild plants: 2005<br>• Complete Forest Ecosite Classification to provide a coarse level inventory of wild plants of interest for harvest in the provincial forest: 2006<br>• Complete risk analysis for the harvest of wild plants and non-game wildlife including management recommendations: 2007; Implementation of recommendations on a priority basis: 2008<br>• Continue to manage the harvest of game species to minimize ecosystem impacts: Ongoing | SE |
| | **1.2 Work with the forest industry to adopt ecosystem-based forest management planning.**<br>• Review Forest Management Plans on a 10 year schedule to ensure they reflect ecosystem-based forest management: Ongoing<br>• Ensure that ecosystem-based forest management plans are adopted and implemented for all new major developments: Ongoing | SE |
| | **1.3 Use natural disturbance patterns in planning forest and grassland management activities to maintain ecosystem processes, functions, and structure.**<br>• Establish landscape and site level provincial standards, guidelines, and targets for forest ecosystems: 2005<br>• Modify standards, guidelines, and targets based on data collected through the forest ecosystem impacts monitoring program: Ongoing<br>• Ensure that lakes, rivers and streams and surrounding ecosystems are protected from the adverse effects of forest harvest through the establishment of appropriate no-harvest buffers reflective of the values at risk and using science as the guiding principle for forest harvesting program design: 2005 | SE |
| | **1.4 Conserve remaining upland and wetland native ecosystems, especially in the highly altered Prairie Ecozone including:**<br>• Continue using the environmental assessment process to consider the significance of potential impacts on native ecosystems: Ongoing<br>• Encourage conservation and reclamation of native ecosystems on private lands by continuing to promote conservation easements, conservation cover programs, and other incentives: Ongoing<br>• Develop a partnership framework agreement with conservation groups and land managers for an ecosystem approach to the acquisition and management of Fish and Wildlife Development Fund Lands: 2004<br>• In consultation with industry, municipalities and governments commit to reviewing regulations to ensure the protection of source water from pesticide contamination including designation of buffer zones adjacent to water bodies in which no pesticides would be applied except for public health purposes such as mosquito and black fly control: 2005 | SE/ SAFRR |

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| **Objective 2**<br>**Protected Areas:**<br>Complete a system of protected areas that are representative of the province's terrestrial and aquatic ecosystems and ensure that they are managed to conserve biodiversity in a manner consistent with their designated level of protection | **2.1 Continue implementation of the Representative Areas Network (RAN) to ensure adequate representation of the province's natural ecosystems.**<br>• Protect 12% of Saskatchewan's lands and waters, and as we move from the current 8.7% to 12%, allow flexibility to consider and accommodate new information on land values that may result in changes to the boundaries of selected areas, except in areas of unique ecological value: Ongoing<br>• Finalize the boundaries and designation of RAN sites within the northern ecoregions of the province: 2006<br>• Identify candidate sites within the Prairie Ecozone: 2008<br>• Assess the RAN to determine which sites can be used as ecological benchmarks: 2006<br>• Develop management policies and standards that apply to all sites recognized by the RAN program: 2005 | SE |
| | **2.2 Develop and implement policies, guidelines and management plans for all protected areas.**<br>• Establish human activity policies for all ecological reserves: 2005<br>• Develop management plans for all Ecological Reserves in the Boreal Plain and Boreal Shield Ecozones: 2005<br>• Identify Provincial Parks and Fish and Wildlife Development Fund (FWDF) lands having biodiversity most at risk and prepare and implement five management plans per year: Ongoing<br>• Implement conservation action for Park Land that supports ecological (and cultural) integrity, including the reintroduction of natural disturbance regimes, and demonstrates ecosystem-based management to the public: Ongoing | SE |

Ecological and economic values are not necessarily fully known when a potential RAN site is identified. Lands with known economic development potential and/or poor ecological values will not be considered as RAN sites. Mineral and petroleum exploration will not be allowed in areas of unique ecological value although mineral and petroleum exploration may be allowed in selected RAN sites. However, if development were to occur the principle of no net loss would be applied and appropriate replacement sites would be considered to ensure the 12% provincial target is achieved.

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective 3<br>**Partnerships for Stewardship:**<br>Continue to work with non-government organizations and agencies on the stewardship of landscapes and aquatic ecosystems across the province. | **3.1 Support implementation of a renewed mandate for the Prairie Conservation Action Plan (PCAP), recognizing that PCAP addresses biodiversity concerns in the Prairie Ecozone.**<br>• Participate in the implementation of the 2003-2008 Five Year PCAP: Ongoing | SE/ SAFRR |
| | **3.2 Work with Aboriginal leaders to develop and implement pilot projects and programs that will enhance the integration of First Nation and Métis people into the renewable resource management decision-making process.**<br>• Develop and implement Cumberland House Moose Management pilot program with First Nations in Saskatchewan, act on recommendations on a provincial scale: 2004<br>• Develop policy and guidelines to integrate Aboriginal traditional knowledge with science in ecosystem-based management: Ongoing | SE |
| | **3.3 Participate in provincial and national programs with other government and non-government agencies and work with neighbouring jurisdictions on stewardship initiatives.**<br>• Participate in the development and implementation of an expanded Canada-wide Stewardship Program that will include urban, rural, protected areas, and resource industry initiatives: Ongoing | SE |
| Objective 4<br>**Species and Ecosystems at Risk:**<br>Protect species at risk (SAR) and prevent new species and ecosystems from becoming threatened through an ecosystem-based approach that is both responsive to the needs of provincially listed species, and that is integrated with the federal *Species At Risk Act*. | **4.1 Ensure adequate protection for species at risk (SAR) under *The Wildlife Act* and protect ecosystems inhabited by SAR.**<br>• Prioritize species suspected of being at risk: 2005<br>• Review high priority species and list those deemed to be at risk under *The Wildlife Act:* 2007<br>• Review protective status of ecosystems on which SAR depend: 2006 | SE |
| | **4.2 Ensure that recovery plans are developed to consider the ecosystems on which the species depends. Act to protect habitat of species and ecosystems at risk.**<br>• Complete recovery plans for high priority SAR within an ecosystem context: Ongoing<br>• In cooperation with land owners and managers, implement relevant protection: Ongoing | SE |
| | **4.3 Enhance scientific knowledge about the distribution and abundance of species at risk, and their ecological relationships.**<br>• Develop and test spatial models that predict the occurrence of SAR and/or threatened plant communities: Ongoing<br>• Conduct surveys on lands suspected to contain SAR and/or threatened plant communities and areas with little data: Ongoing | SE |
| | **4.4 Enhance the accessibility of information about species at risk.**<br>• Develop materials that assist with the rapid field identification of SAR, particularly plants: 2005<br>• Develop materials that describe a standard approach to SAR surveys, especially plants: 2006<br>• Enhance web-based access to SAR information: Ongoing | SE |

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective 5<br>Invasive Exotic Species:<br>Address the growing threat of invasive exotic species. | **5.1 Establish a province-wide committee to develop a provincial invasive exotic species strategy: 2005** | SE |
| | **5.2 Develop a strategy to address the threat of invasive exotic species and carry out research and monitoring to evaluate their distribution and dispersal within the province: 2006** | SE/ SAFRR |
| | **5.3 Identify and introduce measures to prevent the introduction of invasive exotic species, including pathogens and parasites through known pathways of introduction and natural dispersal into the province.**<br>• Development of import protocol and implementation for all wildlife imports: 2006<br>• Development of a risk assessment plan with predictive capacity for new species introduction including for agricultural and horticultural applications: 2005 | SE/ SAFRR |
| | **5.4 Identify and introduce measures to control populations of invasive exotic species existing in province.**<br>• Identification of priority species with cost-effective and practical eradication or reduction programs outlined: 2006 | SE/ SAFRR |
| | **5.5 Participate in national programs and work with neighbouring jurisdictions to manage invasive exotic species within the province.**<br>• Participate in the National Invasive Exotic Species Working Group to develop and implement a strategy to address issues of national concern: Ongoing | SE |
| Objective 6<br>Ecosystem-based Management Principles for Crown Lands:<br>Use an ecosystem-based approach to Crown land and resource management | **6.1 Develop guiding principles for Crown lands and resources, which support an ecosystem-based approach to management.**<br>• Completion and adoption of a set of guiding principles for all Crown land and resource management: 2005 | SE |

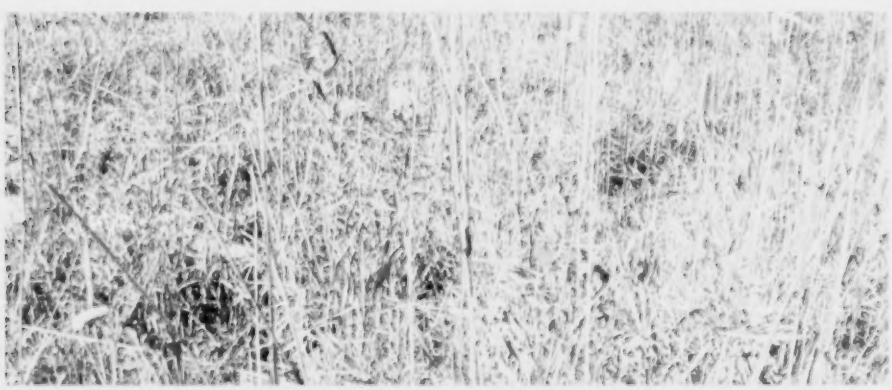
# Goal Two

**Ecosystem-based Management**

*To improve our understanding of ecosystems and increase our resource management capacity*

Sound decision-making that supports policy, planning and program development relies on ready access to accurate information. Readily accessible knowledge of the province's biological resources is critical for economic development, social planning and environmental protection. To be useful, ecological information needs to be communicated among the public and all other stakeholders. Although considerable information currently exists, it needs to be compiled within information systems that will ensure that it is comprehensible, accessible and easy to update.

The current lack of basic information about ecosystems and the cumulative effects of economic activities on ecosystems can make it difficult for industry to comply with regulatory requirements without costly delays. The absence of readily available biodiversity information is costing industry tens of millions of dollars a year nationally in lost time and is resulting in loss of biodiversity in the face of growing development pressures. With adequate information it becomes possible for all land managers to carry out ecosystem-based planning and management in an effective, efficient and integrated manner.



| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| **Objective 7**<br>**Planning and Development:**<br>Develop an ecosystem-based management approach to facilitate the integration of conservation and land use management. | **7.1 Explore how environmental assessment (EA) may be used to integrate biodiversity and development considerations at an early planning stage.**<br>• Support a feasibility study that would explore how to incorporate biodiversity in a more strategic application of EA within landscapes or a regional context. Through the study, issues relevant to a strategic environmental assessment would be identified including, for example, a consideration of information needs, integration methods, land-use policies, funding mechanisms and consultative criteria: 2009 | SE |
| | **7.2 Develop multi-stakeholder integrated land and resource use plans to guide existing and potential uses of provincial forest resources.**<br>• Continue to support planning for lands and waters of significant importance to multiple stakeholders, such as the North Central Land Use Plan and the Amisk-Atik Management Area: 2006<br>• Completion of integrated land-use plans for the commercial forest, Crown agricultural lands and Crown resource lands: Ongoing<br>• Complete 5 year updates for existing integrated forest land use plans: Ongoing<br>• Continue participation in the Prince Albert Model Forest: Ongoing | SE/ SAFRR |
| | **7.3 In addition to enforcing Surface Water Quality Objectives, review, with industry, environmental groups and northern communities, the regulatory system to ensure protection of water quality by basing allowable discharges into a watershed on the assimilative capacity of the watershed: 2006** | SE/SWA |
| **Objective 8**<br>**Ecosystem Information and Management:**<br>Enhance information and information management systems to support ecosystem-based management by all sectors. | **8.1 Promote sharing of information by coordinating biodiversity knowledge networking activities and access to information.**<br>• Continue to build and strengthen the Conservation Data Centre capacity for enhanced species and ecosystem information and access for the public and private sector: Ongoing | SE |
| | **8.2 Develop and implement a standardized protocol for ecological assessments.**<br>• Develop and implement a standard protocol to ensure that data collected as a result of the EA process can be integrated with other relevant data sets: 2006 | SE |
| | **8.3 Support ecosystem data collection and analysis.**<br>• Model possible ecosystem changes due to climate change: 2005 | SE |
| | **8.4 Establish provincial biodiversity classification systems.**<br>• Complete an aquatic classification system: 2007<br>• Complete a forest ecosystem classification system: 2004<br>• Develop a community classification system for the grassland and parkland vegetation communities: Ongoing | SE |

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective 9<br>**Ecological Monitoring:**<br>Establish long-term spatially appropriate monitoring programs to indicate ecosystem health in the province. | **9.1 Establish ecosystem-based monitoring approaches to measure ecosystem health.**<br>• Develop an integrated suite of ecosystem status indicators or indexes and report results in the Saskatchewan State of the Environment Report: 2006 | SE |
| | **9.2 Establish a forest monitoring group to measure forest ecosystem health jointly with the province, forest industry and scientific community.**<br>• Continue development of indicators of forest ecosystem health and testing of sampling protocols: 2005<br>• Implementation of monitoring program by industry in Forest Management Agreements and by SE in other areas of the provincial forest: Ongoing | SE |
| | **9.3 Enhance the current monitoring of water, air and soil to detect significant changes and long-term trends.**<br>• Monitor water quality of major watersheds at least four times per year: Ongoing<br>• Monitor air quality in major cities with expansion to rural air monitoring stations: Ongoing<br>• Detect contaminated sites and monitor changes and clean-up: Ongoing<br>• Monitor change in agricultural soil health: Ongoing | SE/SWA |
| Objective 10<br>**Planning for Environmental Management:**<br>Include biological diversity considerations in government strategic planning and decision making. | **10.1 Use an environmental management approach as a planning tool within all Crown agencies and government departments.**<br>• Include environmental considerations into the strategic planning of all Crown corporations and departments: 2006<br>• Following provincial forestry's lead in obtaining ISO 14001 certification in 2003, pilot an environmental management system within several government departments to reduce environmental impacts and increase operating efficiency: 2009 | SE |

# Goal Three

**Education and Awareness**

*To promote an understanding of the need to conserve biodiversity and use biological resources in a sustainable manner*

Before national and provincial efforts to conserve biodiversity can succeed people need to understand and appreciate the value of biodiversity, the causes of its decline and the actions necessary to maintain or restore its health. Goal Three recognizes that education is an effective means of changing public perspectives on biodiversity. We need to increase the effort and resources dedicated to environmental education so people are provided with an understanding of ecosystems and the social and economic implications of the loss of biodiversity. In addition, there is a need to target environmental literacy in key sectors of society including land and resource managers.

## Environmental Management Systems

Environmental management systems (EMS) are tools that help organizations understand the relationship between their activities and the environment. The importance of environmental management systems are that they provide a benchmark against which to measure performance. Components of an EMS include setting environmental policy for an organization, defining the environmental goals, establishing a program to meet those goals and lastly, establishing an assessment and reporting process.

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective 11<br>**Enhanced Learning:**<br>Enhance biodiversity awareness through informal and formal education. | **11.1 Enhance biodiversity messages in K to 12 curriculum including programs which provide training and continuing education for teachers and enhanced programs which provide hands-on contact with the environment: Ongoing** | Sask Learning/ SE |
| | **11.2 Examine opportunities to incorporate environmental stewardship messages into post-secondary training and prepare a plan of action to develop and implement curriculum changes: 2008** | Sask Learning/ SE |
| Objective 12<br>**Knowledge Sharing and Capacity Development:**<br>Facilitate training, information and technology transfer with land managers in all sectors including government, industry, and landowners. | **12.1 Develop and deliver training programs in ecosystem-based management, sustainable use methods and best practices to government, industry, landowners and other land managers: Ongoing** | SE/ SAFRR |

# Goal Four

**Incentives and Legislation**

*To develop a suite of incentives and legislation supporting the conservation of biodiversity and sustainable use of biological resources*

One of the challenges facing society today is balancing the desire for prosperity through development with the need to conserve the environment in a way that is fair to everyone, other species and for future generations.

Because the benefits of biodiversity conservation are not well understood, environmental conservation has often been seen as a cost to society rather than an investment in the future. At the same time, it is becoming evident that setting aside small isolated islands of natural ecosystems as protected areas is not enough to maintain ecological function across the broader landscape. Goal Four reflects the need for government decision-making, including legislation and regulations, to recognize the value of biodiversity as "natural capital".

Additionally, Goal Four addresses how economic instruments, or incentives, can be used to influence conservation activities throughout Saskatchewan. The focus is to assess a variety of incentives that would allow society to assist the agricultural community in conservation efforts that have broader environmental benefits.

It has been difficult to reconcile society's demand for increased commodity production and ecological protection within agricultural areas. As commodity prices decline, the agricultural industry strives to compensate by increasing production through intensification. However, consumers are now demanding improved environmental stewardship and it may become a prerequisite for farmers in order to expand, or even to maintain markets.

Although many agricultural practices are compatible with biodiversity and others are being improved to reduce their negative impacts, agricultural producers often have limited economic incentives to maintain or adopt beneficial practices or to minimize environmental damage. For example, shifting land from commodity production to wildlife habitat means giving up the income that could have been earned from the commodities the land would have produced. However, in some cases wildlife habitat could be maintained in combination with commodity production, but even acquiring information about conservation techniques can represent a cost to farmers. In addition, the benefits attributable to conservation activities, such as enhanced wildlife hunting, fishing, wildlife viewing and other biodiversity-related benefits, are not enjoyed exclusively by the landowner but are shared with all of society. To be successful, programs designed to enhance and protect biodiversity on agricultural lands need to deal with the economic trade-off between production and conservation.

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| Objective 13<br>**Economic Instruments:**<br>Develop economic instruments to support biodiversity conservation and the sustainable use of biological resources. | **13.1 Assess a variety of economic incentives specifically aimed at the conservation of biodiversity and ecological function and recommend specific instruments:** Ongoing | SE |
| | **13.2 Work with the federal government, the agriculture sector, and/or other stakeholders to implement the environmental stewardship component of the national Agricultural Policy Framework. This will entail the following initiatives:**<br>• Encourage the conversion of marginal cultivated lands to perennial vegetation cover (grasses, legumes, trees, shrubs) to enhance or protect important upland and riparian habitat areas: 2005 | |
| | • Complete a provincial environmental scan to identify priority issues and regions requiring corrective action: 2005 | SAFRR/ SE/ SWA |
| | • The implementation of a voluntary Environmental Farm Plan Program with widespread participation in the completion of individual and group environmental plans: 2008 | |
| | • Begin implementation of environmental farm plans through the adoption of environmentally beneficial practices: 2005 | |
| Objective 14<br>**Policy and Legislation Review:**<br>Review policy and legislation with respect to biodiversity and sustainable use of biological resources in light of threats to biodiversity including climate change. | **14.1 The Saskatchewan Government will ensure that environmental issues are considered when departments conduct a review of existing policy and legislation and in the development of new government policy and legislation: Ongoing** | SE/ Executive Council |

## Canadian Biodiversity Strategy: Four Priorities

The Canadian Biodiversity Strategy is Canada's response to fulfilling its obligations to the United Nations Convention on Biological Diversity. In 2001, Canadian Wildlife Ministers identified four of the biodiversity issues contained in the strategy as national priorities.

**Biodiversity Science and Information** - building a foundation of biodiversity science and information.

1. Enhanced capacity and focus within the science community.
2. A set of research priorities.
3. New governance mechanisms to coordinate science and information.
4. A biodiversity information network.

**Reporting on Biodiversity Status and Trends** - building a national biodiversity monitoring and reporting system.

1. A biodiversity index to assess status and trends.
2. A web portal for accessing status and trends reports.

**Canada's Stewardship Agenda** - engaging Canadians in biodiversity stewardship.

1. Cooperation and coordination.
2. Stewardship network.
3. Stewardship web portal.
4. Stewardship Charter for Canada.

**Invasive Alien Species** - addressing the threat.

1. Aquatic Invasive Species.
2. Terrestrial Animals.
3. Terrestrial Plants.
4. Leadership and Coordination.

## Goal Five

**Inter-jurisdictional Cooperation**

*To cooperate with other jurisdictions (international, federal, provincial, municipal and First Nations as well as Metis people) having policy responsibility and/or program interests to conserve biodiversity and use biological resources in a sustainable manner*

Biodiversity conservation and the sustainable use of biological resources requires the involvement of all sectors of society, both public and private and at all levels. A coordinated approach across all sectors is more likely to succeed and be more efficient than working in isolation. To provide leadership and foster integrated delivery of programs, the federal and provincial governments have signed international and national agreements concerning biodiversity conservation. Partnerships have also been formed among industry, non-government organizations and government to support specific biodiversity conservation initiatives.

There are several areas where the province's biodiversity conservation efforts will benefit from a coordinated approach with other jurisdictions. Where ecological units or migrating species cross political boundaries or where jurisdictions share common issues, a joint approach is desirable. Some examples of common issues include ecoregion and watershed planning, prevention and control of invasive exotic species, establishing research priorities, information sharing and developing management capacity. Within the province, biodiversity conservation efforts will benefit from provincial cooperation with urban and rural municipalities and First Nations Reserves. While some regionally based land use planning is already occurring, the specific biodiversity conservation needs of municipalities and reserves and opportunities for provincial support have not yet been identified in a coordinated manner.

| Objectives | Actions | Lead Agency(ies) |
|---|---|---|
| **Objective 15 Shared Responsibility:** Support opportunities to work with other jurisdictions to contribute to biodiversity conservation and use biological resources in a sustainable manner. | **15.1 To identify opportunities and mechanisms for the provincial government to encourage and support rural, urban and northern municipalities, First Nations and Metis people to enhance biodiversity conservation locally, including:**<br>• Work with other jurisdictions within the province to decrease environmental impacts from human activities including restoration projects, reduction of pesticide use, and encourage native species for landscaping: 2006<br>• Continue to expand programs for recycling within communities and industry: Ongoing | SE |
| | **15.2 Continue to participate in national programs and work with adjacent jurisdictions to support provincial efforts to conserve biodiversity and use biological resources in a sustainable manner including:**<br>• Contribute to the Federal/Provincial/Territorial Biodiversity Working Group initiatives including Invasive Alien Species, Stewardship, Science and Information, and Status and Trends Reporting: Ongoing<br>• Continue to participate in the North American Bird Conservation Initiatives including: North American Waterfowl Management Plan, Partners in Flight, Canadian Shorebird Conservation Plan, North American Colonial Waterbird Conservation Plan: Ongoing<br>• Review and provide Saskatchewan's position to national initiatives to manage climate change and genetically modified organisms: Ongoing<br>• Continue as a partner of Interprovincial Parks (Cypress Hills Interprovincial Park): Ongoing<br>• Participate in the implementation of the National Forest Strategy on Sustainable Forests: Ongoing<br>• Participate in the Western Working Group on Environmentally Sustainable Agriculture: Ongoing | SE/ SAFRR/ SIR |

# Implementation Strategy

Implementation of Saskatchewan's Biodiversity Action Plan has implications for many provincial departments and Crown corporations as delivering on individual actions will directly involve some of them in a leading and/or a supporting role. The government has committed to achieving the goals and objectives of the plan and therefore participating agencies will be responsible for accounting for their actions within their strategic plans. Although agencies may reallocate existing resources, in some cases new funding will be requested during the budget process. Wherever possible and appropriate, the Saskatchewan government will partner with other governments, industry and non-government organizations to maximize the impact of provincial investment and realize the full objectives of the plan.

To coordinate and monitor the implementation of the plan across government, a committee on the environmental reporting annually will be established and chaired by the Deputy Minister of Saskatchewan Environment. The existing Interagency Steering Committee on Biodiversity will be responsible for managing the day to day implementation of the action plan and where possible, will work with other partner groups to achieve the plan's objectives.

# Appendix I: Glossary of Terms

**Aboriginal Peoples** - includes the Indian (First Nations), Inuit and Métis peoples of Canada, as per section 35(2) of the *Canadian Constitution Act,* 1982

**Aboriginal Traditional Knowledge** - refers to the knowledge that Aboriginal peoples have accumulated over countless generations of intimate contact with all aspects of local ecosystems including plants, animals and other natural phenomena

**Adaptive Management** - an approach to making management decisions about complex and unpredictable systems, including ecosystems, which emphasizes conscious experimentation and continuous learning from the experience

**Aquatic** - pertaining to or living near water

**Biodiversity (Biological Diversity)** - includes all species of plants, animals and microorganisms and the ecosystems and ecological processes of which they are parts

**Carbon Sequestrian** - carbon removed from the atmosphere and fixed in living or dead organic material

**Ecologically Sustainable Use** - human use that ensures the capacity for ecosystems to renew themselves, ensuring continued availability for future generations

**Ecosystem** - an interdependent system consisting of all the living organisms in a given area, all the physical and chemical factors of their environment and the processes that link them

**Ecosystem Integrity** - a condition where the function and structure (including genetic, species and ecosystem diversity) of an ecosystem are not impaired by human-induced stresses

**Ecosystem-based Management or Ecosystem Approach** - the integrated management of ecological systems and human activities to maintain or enhance the health and integrity of an ecosystem, including ecosystem function and structure

**Fish and Wildlife Development Fund (FWDF)** "Wildlife Lands" - lands purchased for conservation purposes using funds derived from a portion of all Saskatchewan hunting, trapping and angling licences

**Invasive Exotic Species** - species that are non-native or alien to the ecosystem under consideration, and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

**Local Knowledge** - refers to the historical and practical knowledge of the land and related natural resources accumulated by those who live close to the land, such as farmers and ranchers

**Natural Capital** - natural stocks that yield the flows of natural resources and services without which there can be no economic production (may be marketed or non-marketed)

**Natural Disturbance Regime** - the range, frequency and intensity of natural disturbances in an ecosystem and landscape context

**Prince Albert Model Forest (PAMF)**- a non-profit partnership of forest users committed to the sustainability of Saskatchewan's forests through research, education and the equitable sharing of forest resources. It is supported by direct funding from the Canadian Forest Service and by partner contributions. PAMF is a member of Canada's Model Forest Network and one of a growing number of model forests throughout the world.

**Stewardship** - the individual and corporate responsibility of one generation to maintain the natural inheritance that it has received, both for its benefit and for the benefit of future generations

**Terrestrial** - pertaining to or living on the land

**Watershed** - a discrete geographic area within which all water would drain to a single outlet

**Wetland** - an area of low-lying land, submerged or inundated periodically by fresh or saline water

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